

Unit E: Segments of the Animal Industry

Lesson 1: Exploring the Cattle Industry

Student Learning Objectives: Instruction in this lesson should result in students achieving the following objectives:

1. Name the meat cuts of a beef animal.
2. List the common breeds of beef animals.
3. Explain how to select beef animals.
4. Identify types of production beef cattle operations.

Recommended Teaching Time: 3 hours

List of Resources: The following resources may be useful in teaching this lesson:

Ensminger, M. E., *The Stockman's Handbook*. Danville, Illinois: Interstate Publishers, Inc. 1992

Internet keywords: Beef cattle, beef breed, cattle and animal care.

List of Equipment, Tools, Supplies, and Facilities:

Writing surface
PowerPoint Projector
PowerPoint Slides
Transparency Masters
Copies of student lab sheet

Terms: The following terms are presented in this lesson (shown in bold italics): **PowerPoint Slide 2.**

Cattle feeders	Feeder Calves
Conformation	Frame Score
Cow-calf operation	Marbling
Cutability	Performance
Demand	Polled
Dual-purpose breed	Purebred Breeders
Desirable traits	Supply
	Yearling Feeders

Interest Approach. Use an interest approach that will prepare the students for the lesson. Teachers often develop approaches for their unique class and student situations. A possible approach is included here.

Display pictures of various cattle breeds as students enter the room. Use the PowerPoint Slides throughout the lesson for the pictures. Have students come up with 5 questions each about beef cattle or beef cattle breeds.

Summary of Content and Teaching Strategies

Objective 1: Name the meat cuts of a beef animal.

Anticipated Problem: What are all the meat cuts of a beef animal?

Ask students how many remember one of the very first lessons in Animal Science about the parts of animals. Tell them we are going to take that lesson and go even further by also identifying the meat cuts of the animals. Tell them to take out the diagram they created with the parts of cattle. If they do not all have it, use the PowerPoint Slide 4 for a reference.

- I. Since the main purpose of beef cattle is for meat consumption, we look at them not only to identify their basic parts, but also to identify the beef cuts on an animal.
 - A. There are many external parts of beef cattle that you already know from our previous lesson on anatomy and physiology of livestock. You must know these in order to speak the language when selecting one beef animal over another. **PowerPoint Slides 3 and 4.**
 - B. There are also many terms you should know in reference to beef cuts that are taken from an animal. These are meat terms like loin, sirloin, stew meat, and short ribs. **PowerPoint Slides 5 and 6.**

Have students draw or trace the meat cuts of cattle. Then, they can use this diagram as a review by cutting out each of the meat cuts and placing it back together like a puzzle. Use PowerPoints and TM 1-1 to assist.

Objective 2: List the common breeds of beef animals.

Anticipated Problem: What are the common breeds of beef animals?

Ask students to go around the room and name something that they are good at. It may be drawing, reading, running, etc. Just like each of us have individual talents, so do cattle breeds. Tell them we will discuss a few in class then they will research a breed that interests them.

II. The common breeds of beef animals in Afghanistan were brought here from many different countries. First, we should understand some terms used. **Polled** is born naturally without horns. **Marbling** describes the desirable presence of fat in the muscle. **Cutability** talks about the amount of available retail cuts from the carcass. A **dual-purpose breed** is traditionally used for both milk and beef production. **PowerPoint Slide 7.** Some breeds that may be suitable for the climate and terrain in Afghanistan include: Brahman, Oxen, and Zebu.

A. **Brahman** are easily identified by the hump on their back and long floppy ears. The most common colors are solid gray or solid red. The Brahman breed originated from *Bos indicus* cattle originally brought from India. Through centuries of exposure to inadequate food supplies, insect pests, parasites, diseases and the weather extremes of tropical India, the native cattle developed some remarkable adaptations for survival. Brahman have loose saggy skin with sweat glands and the ability to sweat freely through the pores of the skin, which contributes materially to their heat tolerance. They can walk long distances to water and these cattle thrive where other types of cattle, at best, merely survive. **PowerPoint Slides 8 and 9.**

B. **Oxen** (singular **ox**) are cattle trained as draft animals. Often they are adult, castrated males. Oxen are used for plowing, transport, hauling cargo, threshing grain by trampling, powering machines for grinding grain, irrigation or other purposes, and drawing carts and wagons. Oxen are most often used in teams of two, paired, for light work such as carting. **PowerPoint Slides 10 and 11.**

C. **Zebu** is a term which is synonymous with "Bos Indicus," the scientific name for the humped cattle of the world. The major Zebu cattle breeds of the world include Gyr, Guzarat, Indu-Brazilian, Nelore, and Brahman. They originated in India, and are thought to be the world's oldest domesticated cattle. **PowerPoint Slides 12 and 13.**

After discussing these breeds have students create a list of the common cattle breeds in your area. Independently or in pairs have students select a breed of cattle. Then, instruct them that they will be the "class expert" in that breed. They must find information about their breed such as color, weight at maturity, country of origin, desirable traits, and one interesting fact. Then, they will inform the rest of the class about their breed. Use LS 1-1 for this information.

Objective 3: Explain how to select beef animals.

Anticipated Problem: How do I know what beef animals are better than others?

Have student's list items that make one animal better than another. They may be simple things like color or attitude. Tell students that we are going to learn about selecting animals and desirable traits that farmers look for.

III. In order to improve your herd, you must be able to select animals with more desirable traits.

Desirable traits are traits that are in demand at the marketplace. Mainly, selection is based on conformation and performance records. **Conformation** describes the shape, form, and type of an animal. **Performance** describes the ability of an animal to reproduce, wean, gain weight, and stay strong. **PowerPoint Slide 14.**

- A. One way to select animals to bring into a herd is a frame score. The **frame score** is a measurement based on animals being observed and evaluated at 205 days. A one through seven scale is used to determine the frame score.
- B. A conformation score may also be determined on an animal on a scale of 1-17. The scoring of 9-11 is below average, 12-14 is average, and 15-17 is above average. **PowerPoint Slide 15.**
- C. When selecting animals, you must realize that no one breed is going to be superior in all traits. You need to decide what your individual priorities are and select a breed based on them. In addition to selection, you must commit to good management practices in order to keep the cattle superior. Good management will include keeping diets nutritious, making comfortable living conditions, continually monitoring animals for health concerns, and constant assessment of better breeding stock. **PowerPoint Slide 16.**
- D. The final consideration when selecting animals to improve your herd is choosing reputable producers. This will help insure animals relatively free from disease and genetic problems and you will be able to look at records of the animal to determine if it will be profitable to your herd. **PowerPoint Slide 17.**

Use TM: 1-2 to discuss ways to select beef animals. If possible, take students to view cattle and "select" the cattle they would purchase.

Objective 4: Identify types of production beef cattle operations.

Anticipated Problem: What type of production best suits my needs?

In many parts of the world beef producers can select what type of beef cattle operation they will have. While this may not be available everywhere in the world, it is important to understand the different segments of beef cattle production.

- IV. There are three main types of beef cattle operations. The first type is cow-calf producers. The second is feeders or feedlots and the third is purebred breeding. Before you decide what type of setup is best for you, make sure that you analyze all the advantages and disadvantages of producing beef to make sure it is the most profitable way to utilize your resources. You may also want to look at your local market and decide what supply and demand issues you may face.
- A. A **cow-calf operation** consists of keeping mature cattle to produce calves to sell to other producers. Cows are bred in this setup to have a calf every year, usually in late winter or early spring. These calves are sold in two ways. **Feeder calves** are weaned animals under a year old that are fed until they are sold to a feedlot, where they are kept and fed to slaughter weights. **Yearling feeders** are calves between 1 and 2 years old that are sold to another producer to feed out to slaughter weight or finish. Cow-calf operations utilize pastures for grazing through the growing months and are less labor intensive than other operations. It is easy to start an operation because of low investment costs. These setups require very little equipment and facilities and can be especially beneficial when land that is not suited for crops is used. Another advantage is that you can increase your herd by keeping animals back each year—you don't have to keep buying more animals. Some disadvantages of cow-calf operations are the large initial land investment, not being able to make a profit because the demand for calves is low when you are ready to sell, and problems associated with weaning or size of calves. **PowerPoint Slides 18 and 19.**
- B. **Cattle feeders** are producers that feed beef animals out for the slaughter market. Owners usually buy yearlings or feeder calves and try to finish them in as little time as possible. The initial investment is high for this type of operation because of the need for high quality feed and the housing and equipment needs. The production lag is less than in a cow-calf operation because you can expect to turn the animals in 4-6 months. In addition to higher feed, housing, and equipment expenses, and labor costs are also high. With all the expenses and need for quick turnover time, it is essential to be a good manager in a cattle feeder operation. **PowerPoint Slides 20 and 21.**
- C. **Purebred breeders** are producers that keep herds for purebred breeding stock and provide replacement bulls or semen for cow-calf operations. Their stock provides genetic improvement to herds. The initial start up costs of purebred breeders are high because genetically superior animals are more expensive than average animals. Another large investment is the time it may take to develop high quality animals. It will sometimes take years to show the success of an animal by keeping records of its offspring. It takes a very knowledgeable manager to run a profitable purebred operation. **PowerPoint Slides 22 and 23.**

Use TM: 1-3 as a basis for classroom discussion on the advantages and disadvantages of each type of beef operation.

Review/Summary: Use the student learning objectives to summarize the lesson. Have students explain the content associated with each objective. Have students name the meat cuts of a beef animal. Then, list the common breeds of beef animals. Next, explain how to select beef animals. And finally, identify types of beef production setups.

Application: Application can involve student activity with the provided labs.

Evaluation: Evaluation should focus on student achievement of the objectives for each lesson. Various techniques can be used, such as performance on the application activities. A sample written test is attached.

Answers to Sample Test:

Part One: Matching

1 = e, 2 = f, 3 = d, 4 = b, 5 = a, 6 = h, 7 = g, 8 = c

Part Two: Completion

1. cutability
2. Supply, demand
3. adult castrated males
4. Desirable traits
5. frame score
6. Polled

Part Three: Short Answer

Students may list any of the following:
Brahman, Oxen, Zebu, Nelore, Indu-brazilian.

Test

Part One: Matching

Instructions. Match the term with the correct response. Write the letter of the term by the definition.

- | | | |
|----------------------|-----------------------|-----------------|
| a. Cattle feeders | d. Cow-calf operation | g. Conformation |
| b. Demand | e. Feeder calves | h. Marbling |
| c. Purebred breeders | f. Yearling feeders | |

- _____ 1. Weaned animals under a year that are fed until they are sold to a feedlot, where they are kept and fed to slaughter weights.
- _____ 2. Calves between 1 and 2 years old that are sold to another producer to feed out to slaughter weight or finish.
- _____ 3. Keeping mature cattle to produce calves to sell to other producers.
- _____ 4. The amount that could be purchased at a given time for a given price.
- _____ 5. Producers that feed beef animals out for the slaughter market.
- _____ 6. The desirable presence of fat in the muscle.
- _____ 7. The shape, form, and type of an animal.
- _____ 8. Producers that keep herds for purebred breeding stock and provide replacement bulls or semen for cow-calf operations.

Part Two: Completion

Instructions. Provide the word or words to complete the following statements.

- 1. The _____ or the amount of available retail cuts from the carcass.

- 2. _____ is the overall amount of product available at any given time and _____ is the amount that could be purchased at a given time for a given price.

- 3. The Oxen is an _____ used for work on a farm, usually in teams of two.

- 4. _____ are traits that are in demand at the marketplace.

5. The _____ is a measurement based on animals being observed and evaluated at 205 days.
6. _____ describes animals that naturally do not have any horns.

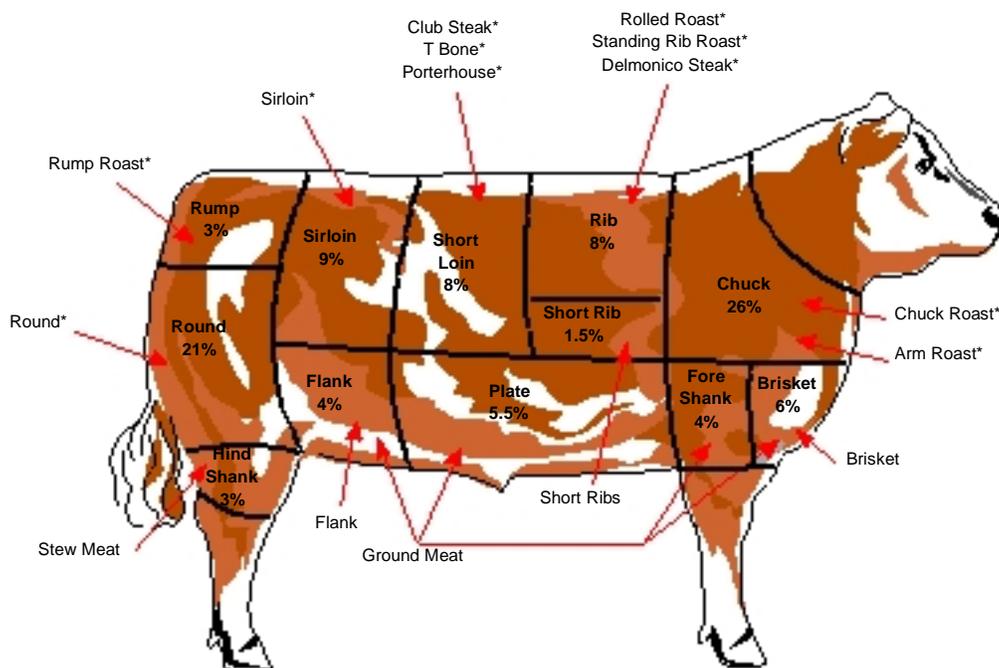
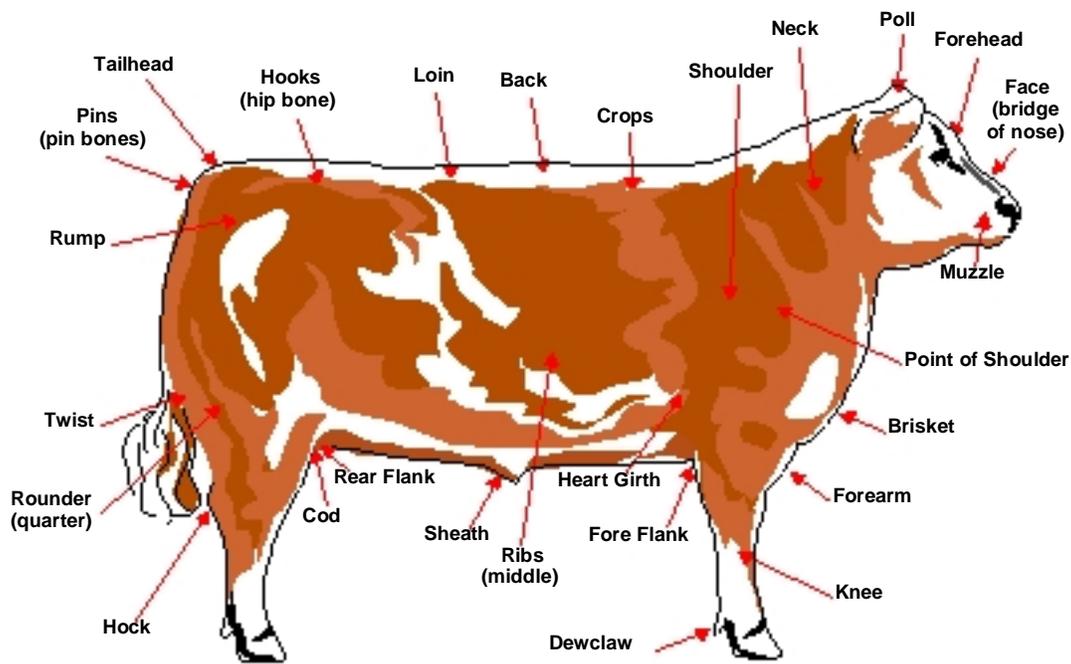
Part Three: Short Answer

Instructions. Provide information to answer the following question.

What are common breeds of beef cattle?

TM: 1-1

BEEF EXTERNAL PARTS/MEAT CUTS



ANIMAL SELECTION FOR HERD IMPROVEMENT

- **Desirable traits are traits that are in demand at the marketplace. Mainly, selection is based on conformation and performance records.**
- **Conformation describes an animal's shape, form, and type.**
- **Performance describes the ability of an animal to reproduce, wean, gain weight, and stay strong.**
- **Frame score is a measurement based on animals being observed and evaluated at 205 days.**
- **When selecting animals, you must realize that no one breed is going to be superior in all traits.**
- **You need to decide what your individual priorities are and select a breed based on your resources.**
- **Choosing reputable producers will help insure animals are free from disease and genetic problems.**

BEEF PRODUCTION OPERATIONS

Cow-calf

Advantages:

Disadvantages:

Cattle feeders

Advantages:

Disadvantages:

Purebred breeders

Advantages:

Disadvantages:

Name:

Cattle Breed:

Country Of Origin	
Weight for Mature Males	
Weight for Mature Females	
Color	
Desirable Traits	
Interesting Facts About the Breed	